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CARL ZEISS

OCT. 1964

Stereomicroscopes

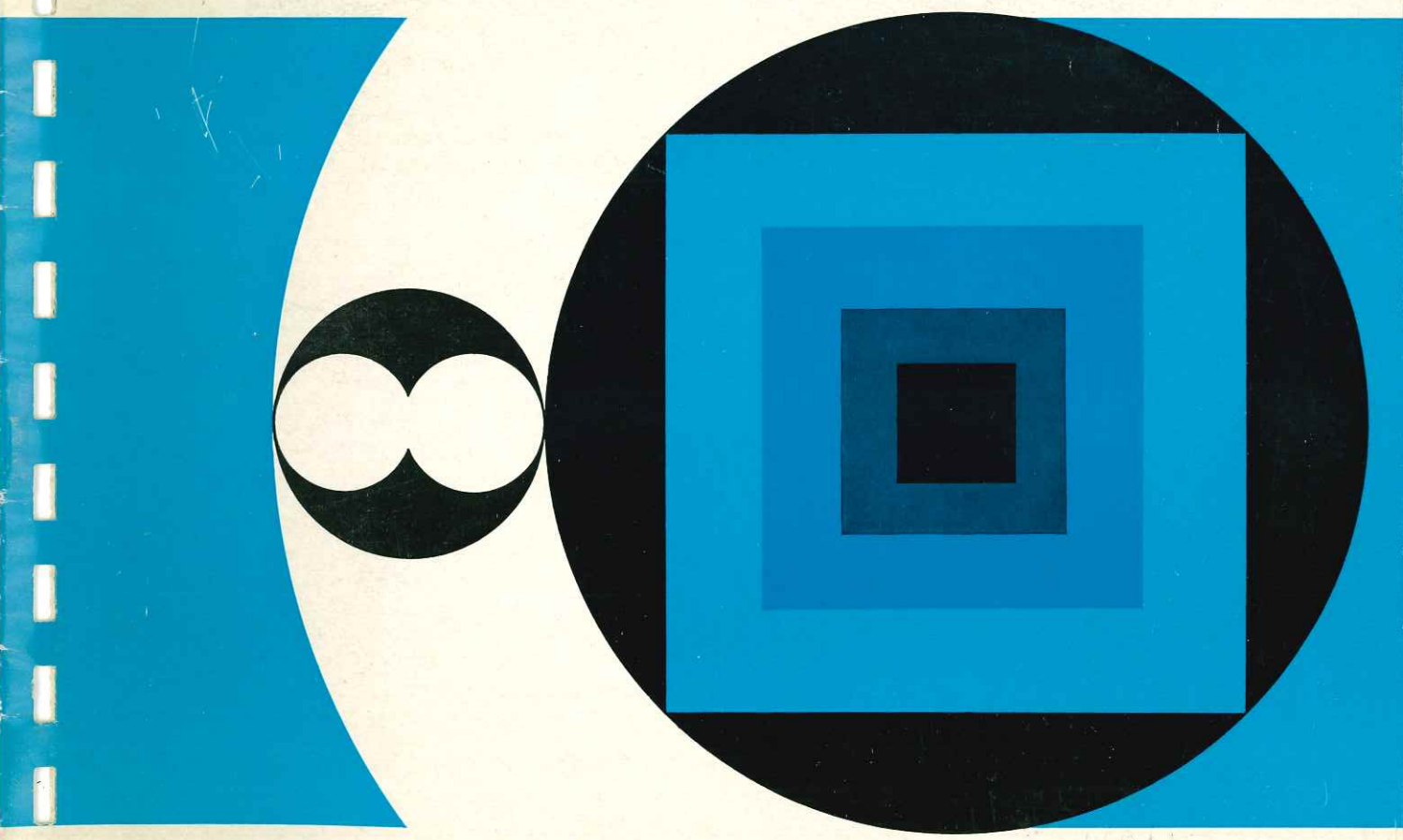
Stereomicroscope 01

Stereomicroscope 02

Stereomicroscope I

Stereomicroscope II

Supplementary Equipments



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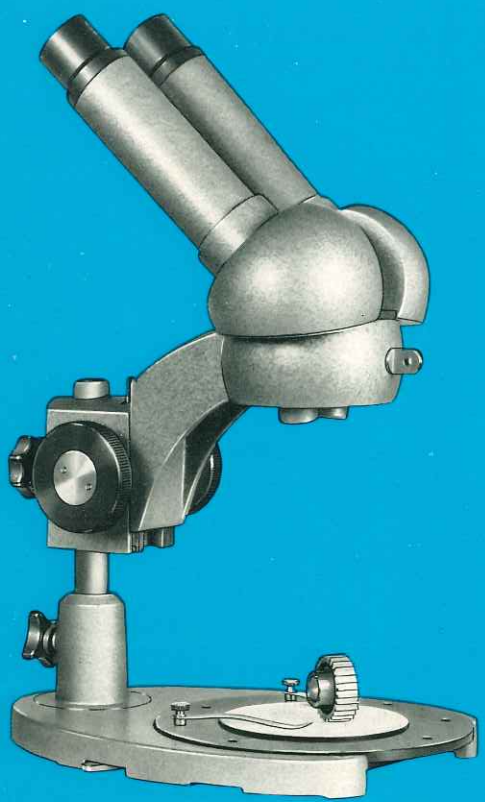
This catalogue presents a comprehensive series of ZEISS Stereomicroscopes. For decades instruments of this type have proved their worth in all fields of scientific research and in industrial laboratories for checking raw materials, tools of production, as well as intermediate and finished products.

Stereomicroscopes 01 and 02 are described first. They have an invariable objective magnification. Subsequently Stereomicroscopes I and II are taken up. In these the objective magnification is varied by changing paired objectives or by switching in telescopic systems having different magnifications.



Characteristic Features of ZEISS Stereomicroscopes

Stereomicroscope 0

Optics

The Stereomicroscopes 0 have an invariable objective magnification. The total magnification is for the Stereomicroscope 01: 2.5×/6.3×/16×, and for the Stereomicroscope 02: 8×/20×/50×. These magnifications are varied by changing the three paired objectives 4×, 10×, and 25×.

For special purposes the instrument can be supplied with the binocular tube rotated by 180°.

Stands

Stereomicroscopes 0 can be detached from their stands and mounted without use of intermediate pieces on available column stands or on machines in the workshop.

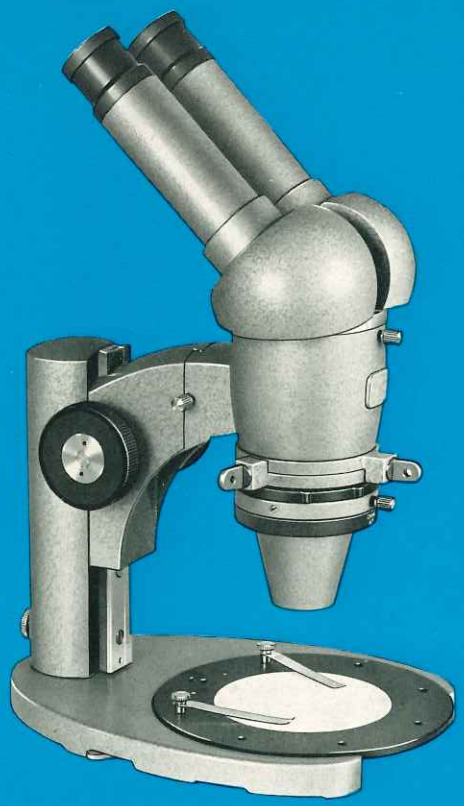
Stands P 01 are provided with a 200 mm. column, stands P 02 with a 150 mm. column. Columns of 250 mm. and 300 mm. are also supplied for examination of large objects.

Stages

Insets are available for insertion in the simple circular stage. These facilitate special operations. In addition, stages of the STANDARD Microscope can be used which permit systematic search of specimens. When no stage is attached to the stand, the instrument can be placed directly on a large object.

Illumination

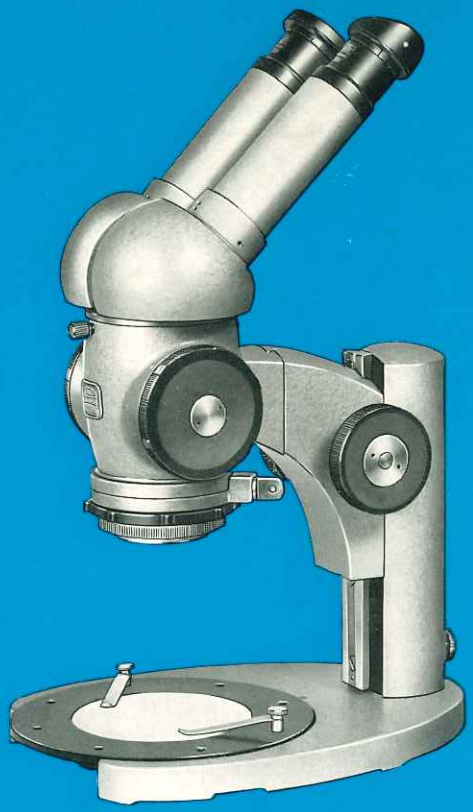
The tube housing is provided with a permanent lamp holder to which a low-voltage epi-illuminator can be attached. It is possible to carry out examinations in transmitted light by inserting an illuminating device for transmitted light into the base of the stand.



Stereomicroscope I

Optics	A quick-change device permits exchange of 7 paired objectives of different magnification at the tube body. In addition, the paired eyepieces can be alternatively used in the inclined binocular tube which can be attached in two directions differing from each other by 180°.
Stands	Stand G permits examination with incident light only. Stand F has a 6 cm. higher column to which a stage support can be clamped which provides for observation also in transmitted light. The Microscope is mounted on the various column stands with a special supplementary pinion box. This same pinion box can also be used for mounting the Microscope on machines in the workshop.
Stages	The simple circular stage is offered for stands G and F. Various insets are provided for it which facilitate special operations. In addition, stages as supplied for the STANDARD Microscopes can be used which permit systematic search of the specimens. If large objects are to be examined on the spot, it is possible to remove the stage from the microscope base and set the instrument directly on the object. In so doing a metal pin in the column of the stand facilitates support of the instrument.
Illumination	Two rotatable lamp holders are mounted on the intermediate tube of Stereomicroscope I. Each accommodates a low-voltage epi-illuminator which serves for incident as well as for transmitted illumination. A special illuminating device for transmitted light is recommended for high magnifications with transmitted light.

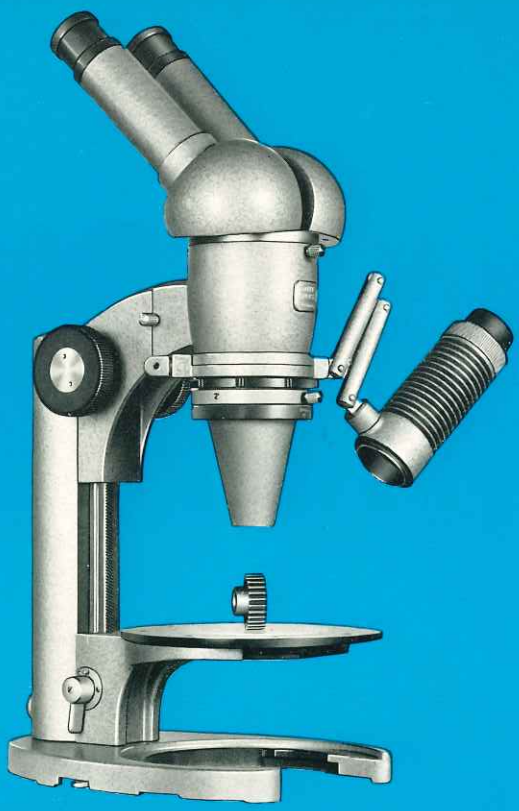
Stereomicroscope II



Optics	5 different objective magnifications which – depending on the eyepieces used – yield a total magnification between 6.3× and 100× (when using in attachment objective these are between 12.5× and 200×) can be set by simply turning a drum. If the image is in focus with the highest magnification, it will also be in focus with all the others.
Stands	For examinations with the Stereomicroscope II, stand G is used for incident light, stand F for examinations in incident and transmitted light, as well as column stands in the same manner as with Stereomicroscope I (cf. page 4).
Stages	The stages which can be attached to Stereomicroscope I can also be used with Stereomicroscope II in the same manner (cf. page 4).
Illumination	Two rotatable lamp holders are mounted on the intermediate tube of Stereomicroscope II. Each accommodates a low-voltage epi-illuminator which serves for incident as well as transmitted illumination. A special illuminating device for transmitted light is recommended for high magnifications with transmitted light.
Photographic Devices	Individual photographs are taken by means of the photo sliding tube and an attachment camera which take the place of the binocular tube. The two pictures required for a stereo pair are obtained by making two successive exposures.
POL	Stereomicroscope II can be equipped for simple observations in polarized light, using an orthoscopic beam and transmitted illumination.

Component Part	Stereo Tubes	Optical Systems			Stands and Column Stands	
Stereomicroscope 01	Stereomicroscope 01 with inclined binocular tube (Tube can be reversed by 180°)	Permanently installed objective for magnifications of 2.5×, 6.3×, and 16× with eyepieces 4×, 10×, and 25×		Eyepieces 4×, 10×, and 25× with fixed eyelens Eyepieces 10× and 25× with focusing eyelens and receptacle for graticules	for thicker objects, 250 mm. and 300 mm. columns: Stand P 01 with 200 mm. column	can be attached with supplementary pinion box to: Stand H (table stand with rack and pinion movement) range abt. 700 mm. + 320 m. by pinion adjustment in height by pinion 220 m. swinging range ° Stand J (table stand) range abt. 750 mm. swinging range 90°
Stereomicroscope 02	Stereomicroscope 02 with inclined binocular tube (Tube can be reversed by 180°)	Permanently installed objective for magnifications of 8×, 20×, and 50×, with eyepiece 4×, 10×, and 25×			for thicker objects, 250 mm. and 300 mm. columns: Stand P 02 with 150 mm. column	
Stereomicroscope I	Stereo tube I with tube body for attachment of paired objectives. Binocular tube can be reversed by 180°.	7 paired objectives 0.63, 1, 1.6, 2.5, 4, 6.3, 10 attached to a quick changer			Stand G (for incident light) Stand F (for incident and transmitted light)	can be attached without additional accessories to: Stand C (small table stand) range abt. 300 mm. swinging range 0° Stand D (for clamping to table top) range abt. 400 mm. swinging range 360°
Stereomicroscope II	Stereo tube II with housing for magnification changer and principal objective F = 100. Binocular tube can be reversed by 180°.	Quick changer for 5 magnification steps (drum switching) 0.6, 1, 1.6, 2.5, 4	Attachment objective 2× (for doubling the 5 magnification steps)			

Stages				Illuminating Devices		Photomicrographic Devices
Simple circular stage ...h a black-...ite metal plate and a ground-...ss plate as ...ll as 2 stage clamps ...sets for same: ...support, ball stage, jewel-bearing ...ceps holder ...th jewel-bearing forceps I ... II ...Gliding stage	For special problems in examinations with incident light, stages of ZEISS STANDARD Microscopes can be inserted with aid of a stage holder (47 52 35) in the base of stands F, G, P 01, and P 02	For special problems in examinations with transmitted light, stages of ZEISS STANDARD Microscopes can be used 1. with aid of stage holder (47 52 35) and clamping stage support for stand F (47 52 30) 2. with aid of a clamping stage support for microscope stages (47 52 31) (stage firmly attached), it can be used on stand F	Polarizing rotating stage with polarizer on clamping stage support (for stand F only)	A low-voltage epi-illuminator can be attached for epi-illumination (not rotatable) Two low-voltage epi-illuminators can be attached for incident or transmitted illumination and combined illumination (rotatable)	For examinations in transmitted light, especially at high magnifications and for photomicrography: illuminating device for Stereo-microscopes	Photo sliding tube with attachment ring and ZEISS Attachment Camera. Stereo adapter for Contarex Special and Contax



Stereomicroscope I

Stereomicroscope 0

Frequently serial examinations with constant magnifications are called for in workshops and laboratories of industrial establishments as well as in scientific institutes.
The construction of Stereomicroscopes 0 meets these requirements to an outstanding degree.
For example, they are used with signal success in watchmaking industry for assembly of small parts under the Microscope.

By changing three paired eyepieces 4×, 10×, and 25×, the total magnification obtainable with Stereomicroscope 01 is 2.5×, 6.3×, and 16×, and with Stereomicroscope 02 it is 8×, 20×, and 50×. The unusually great working distance (distance between front edge of the objective and upper surface of the object) of abt. 170 mm. with Stereomicroscope 01 and abt. 100 mm. with Stereomicroscope 02 is specially valuable.

With the normal instrument equipment the binocular tube is so arranged that inclined observation is directed towards the stand. If desired, the Microscopes can be supplied with the binocular tube rotated by 180° from the standard position.

Tube I with Pairs of Objectives

The inclined binocular tube is seated on the intermediate tube of Stereomicroscope I and can be secured in either of two directions differing by 180°.

The quick-change device is mounted on the under side of the intermediate tube. It provides for rapid and convenient interchange of 7 paired objectives differing in magnification. The three objectives of higher magnification extend outside of the tube body, the three of lower magnification on the other hand are brought into the interior of the tube body.

An adequate space remains between the lower edge of the objective and the upper surface of the object so that manipulation of the specimen can be conveniently carried out.

Objectives used	Catalogue Number	Working distance abt.
0.63 / 0.025	47 50 10	85 mm.
1.0 / 0.03	47 50 11	
1.6 / 0.04	47 50 12	
2.5 / 0.05	47 50 13	
4.0 / 0.07	47 50 14	65 mm.
6.3 / 0.09	47 50 15	43 mm.
10.0 / 0.12	47 50 16	28 mm.

Furthermore, two rotatable lamp holders are attached to the tube body which can be connected either with two low-voltage epi-illuminators for incident and transmitted light, or for combined illumination.

The Stereomicroscope II incorporates one joint principal objective for both beams. All other instruments have been designed according to the Greenough-system.

Stereo Tube II with Changing Device

The characteristic feature of all combinations of the Stereomicroscope II is the tube housing the changing device. This latter device is a revolving drum to be operated from outside. It incorporates several small telescope systems which, depending on their setting, yield different magnifications.

These are 0.6×/1×/1.6×/2.5×, and 4×. These magnifications multiplied by the eyepiece magnification give the total magnification of the Microscope.

Stereo tube II is mounted on the housing of the revolving drum. It erects the image. It can be secured in either of two directions differing by 180°. The interpupillary distance is adjusted by swinging the two tubes back and forth.

Instrument	Stemi 01	Stemi 02	Stereomicroscope I							Stereomicroscope II			
Objective magnification	0,63 x	2,0 x	0,63 x	1,0 x	1,6 x	2,5 x	4,0 x	6,3 x	10 x	0,6 x	1,0 x	1,6 x	2,5 x
Eyepiece field of view No.	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF	V / OF
4 x / 30	2,5 / 48	8 / 15	2,5 / 48	4 / 30	6,3 / 19	10 / 12	16 / 8	25 / 5	40 / 3				
10 x / 20	6,3 / 32	20 / 10	6,3 / 32	10 / 20	16 / 12,5	25 / 8	40 / 5	63 / 3	100 / 2	6,3 / 32	10 / 20	16 / 12,5	25 / 8
25 x / 10	16 / 16	50 / 5	16 / 16	25 / 10	40 / 6	62,5 / 4	100 / 2,5	160 / 1,5	250 / 1	16 / 16	25 / 10	40 / 6	62,5 / 4
10 x with attachment objective										12,5 / 16	20 / 10	32 / 6	50 / 4
25 x with attachment objective										32 / 8	50 / 5	80 / 3	125 / 2

Eyepieces

Eyepieces 10× with enlarged field of view are standard for Stereomicroscopes. If required, eyepieces of other magnification can also be supplied.

If they are to be used for measurements, eyepieces 10× and 25× are provided with a focusing eyelens. Various micrometer disks can be inserted into these special eyepieces. This also permits compensation of differences in the refractive power of the observer's eyes.

Selection of the eyepieces appertaining to the Stereomicroscopes 0 is decisive for the final magnification of the instrument. The image scale can only be varied by changing the eyepieces.

The above table shows the magnifications (V) obtainable with ZEISS Stereomicroscopes and also the diameter in millimeter (OF) of the object field. For the Stereomicroscope II due note has been taken of the attachment objective 2×.

47 52 01

47 52 25

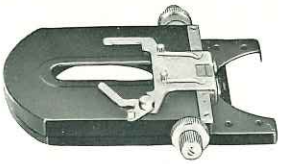
47 52 45

47 52 24

47 52 20

47 52 22

47 33 30 +47 52 35



47 33 35 +47 52 35

47 33 21

47 33 15 +47 52 35

47 52 00

47 52 30

Stands for Stereomicroscopes I and II

Two basic stands are supplied for Stereomicroscopes I and II. The choice between them is determined by the nature of the examinations which are to be made with the instrument.

Stand G serves exclusively for observations with incident light. The simple circular stage is inserted into its base.

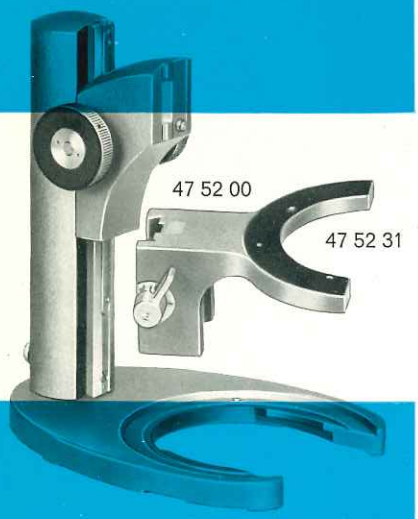
Stand F permits observation with both incident and transmitted light. In addition to the simple circular stage, either the special stage support for this stand or the standard support for micrsocope stages can be clamped to it. In addition, it is possible to use a special illuminating device for transmitted light.

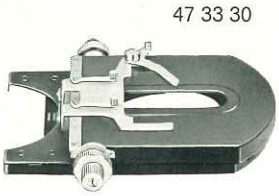
Both stands

1. can accommodate the simple circular stage in the base of the Microscope. The black-white metal inset for the simple circular stage is interchangeable with a ground-glass disk or special devices for the reception of specimens. These include a V-support, a ball stage, and a jewel-bearing forceps holder with the required jewel-bearing forceps. A gliding stage can also be used in place of the simple circular stage.

2. can be set directly on top of larger objects. A pin adjustable in height is inserted in the column of the stand for compensating differences in elevation.

3. permit the use of stages supplied for the ZEISS STANDARD Microscopes, if they are mounted on a stage holder, such as: a large rectangular mechanical stage, a circular rotating and centering mechanical stage (with optional graduation in degrees), a circular rotating and centering stage (with optional graduation in degrees), and a circular rotating and centering gliding stage.





Stand F, in addition,

permits the examination of objects with transmitted light. For that purpose an illuminating device for transmitted light (49 50 55) is inserted in the base of the stand. For simple examinations it suffices to attach the stage in an elevated position in order to provide room beneath it for a transmitted-light inset. This can be accomplished in two ways:

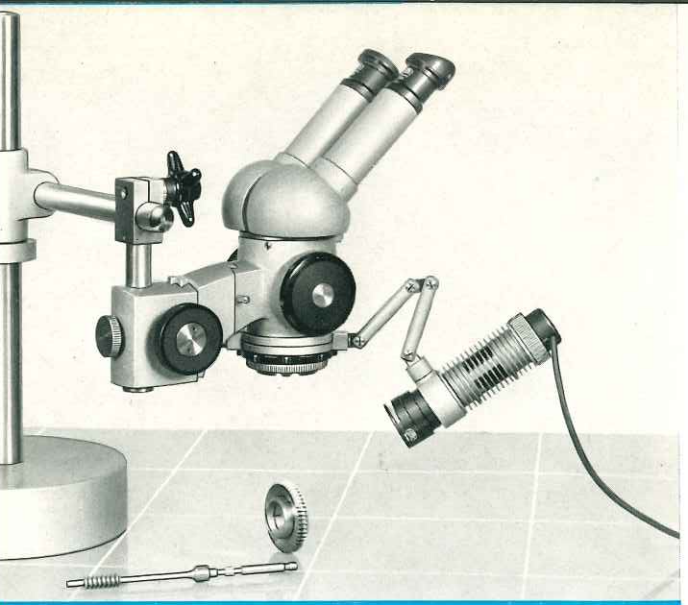
1. By means of a stage support which is clamped to stand F. Any of the stages mentioned (for stand G) with a stage holder can be mounted in the same manner as they are mounted on the base of the Microscope.

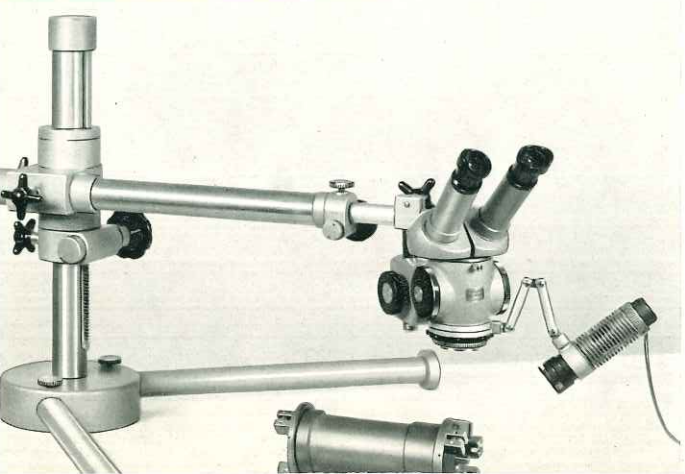
2. By means of a clamping stage support for microscope stages on which stages of the STANDARD Microscopes can be permanently attached. This eliminates the stage holder.

Greatest admissible thickness of specimens when observations are made with incident light using the simple circular stage is approximately

	on stand G				on stand F			
	objectives				objectives			
	0.63 – 2.5	4	6.3	10	0.63 – 2.5	4	6.3	10
Stereomicroscope I	35 mm.	35 mm.	36 mm.	36 mm.	95 mm.	95 mm.	96 mm.	96 mm.
	without attachment objective		with attachment objective		without attachment objective		with attachment objective	
Stereomicroscope II	35 mm.		87 mm.		95 mm.		147 mm.	

The possible object thickness is reduced
by 30 mm. when using the ball stage
by 16 mm. when using the gliding stage





Column Stands

If specimens larger than can be accommodated on the two basic stands are to be examined, four different column stands are available to which Stereomicroscopes 0 can be directly attached, Stereomicroscopes I and II by means of an intermediate pinion box. These stands are described below.

Table stand C has proved its worth for example in all branches of industry for the examination of finished and intermediate products, likewise for many problems arising in scientific and technical institutes. It has a swinging range of 360°, the maximum distance from the edge of its base to the center of the optical axis is 300 mm.

Table stand D is clamped to an edge of the table top. ZEISS Stereomicroscopes can be swung over large objects without interference with the working area. It has a swinging range of 360° and a maximum extension of 400 mm. to the center of the optical axis.

The large **table stand H** owes its great stability to two outriggers. It has its own rack and pinion movement for adjusting the height and extension of the swinging arm. This is a convenience in examining extended objects at different levels.

A similar stand but without rack and pinion movements is supplied under the designation **table stand J.**

Table stand H:

Extension from the edge of the central base to the optical axis of the Microscope abt. 700 mm. Additional extension by means of the pinion 320 mm.
Adjustment in height by rack and pinion 220 mm.
Swinging range 90°.

Table stand J:

Extension from the edge of the central base to the optical axis of the Microscope abt. 750 mm.
Swinging range 90°.

Stereomicroscope II POL

In contrast to all other types of stereomicroscopes, Stereomicroscope II provides, besides means for simple observation in polarized light, also for simple measurements with transmitted light in the orthoscopic beam. In addition it is possible to determine the optical characteristics of doubly refractive substances and to ascertain their angle of extinction.

The polarizing revolving stage with polarizer, mounted on a stage support clamped to the stand, is employed for these investigations. The graduated periphery of the stage permits readings to 0.1°.

Bore holes in the stage serve for mounting the attachable mechanical stage POL. It serves for systematic searching of the specimen and for ascertaining its coordinates. The range of movement is 20 × 25 mm. A point-counter supplement is also available for use in conjunction with this mechanical stage.

The accompanying analyzer device permits three different adjustments:

Analyzer combined with a compensator red 1st order.

Analyzer alone.

Unobstructed passage of the light for examinations in plane-polarized light.

One of the paired eyepieces for Stereomicroscope II POL is provided with a focusing eyelens and a cross lines graticule. By means of it and the accompanying anhydrite adjusting slide the vibration planes of crossed polarizers are adjusted to one another.

For simple qualitative examinations in polarized light a combination of the above-mentioned polarizer and a simple analyzer suffices.

Illuminating Device for Incident and Transmitted Light

The low-voltage illuminating device of the Stereomicroscopes is fastened to the tube housing. On Stereomicroscopes I and II the lamp holder can be turned on the housing and clamped in any position, whereas on Stereomicroscopes 01 and 02 it is in fixed position. A jointed arm provides for far-reaching changes in the direction of the illuminating beam.

There are holders for two low-voltage illuminators 6 V, 15 W. For epi-illumination the beam is adjusted to fall directly on the object. In examinations with transmitted light and low magnifications, the light is directed on the white surface of the transmitted-light inset, with high magnifications on a frosted mirror which can be mounted on the transmitted-light inset.

Illumination with incident and with transmitted light can also be employed simultaneously. A prism can be mounted on Stereomicroscope II for vertical illumination of the interior of hollow bodies and holes. The light reflected by the prism falls upon the examined object approximately in the direction of observation.

A more powerful illumination than that supplied by the above-mentioned illuminators is desirable at times when high magnifications are employed or for photomicrography. In such cases Stereomicroscopes I and II can be provided with an illuminating device supplying two light rays correctly adjusted to the two respective beams of the Stereomicroscope. This accessory consists of a stage inset, which is placed in the base of stand F, of stand P 01 or P 02 containing two permanently adjusted and centered microscope illuminators. This furnishes one light source each directly in line with the prolongation of the optical axis of each of the two microscope beams.

For eliminating reflections with epi-illumination, a polarizing filter is placed with aid of a holding ring on the illuminators of Stereomicroscope II. Then reflections are reduced or completely eliminated by suitably aligning a simple analyzer attached in front of the objective.

Additional Accessories

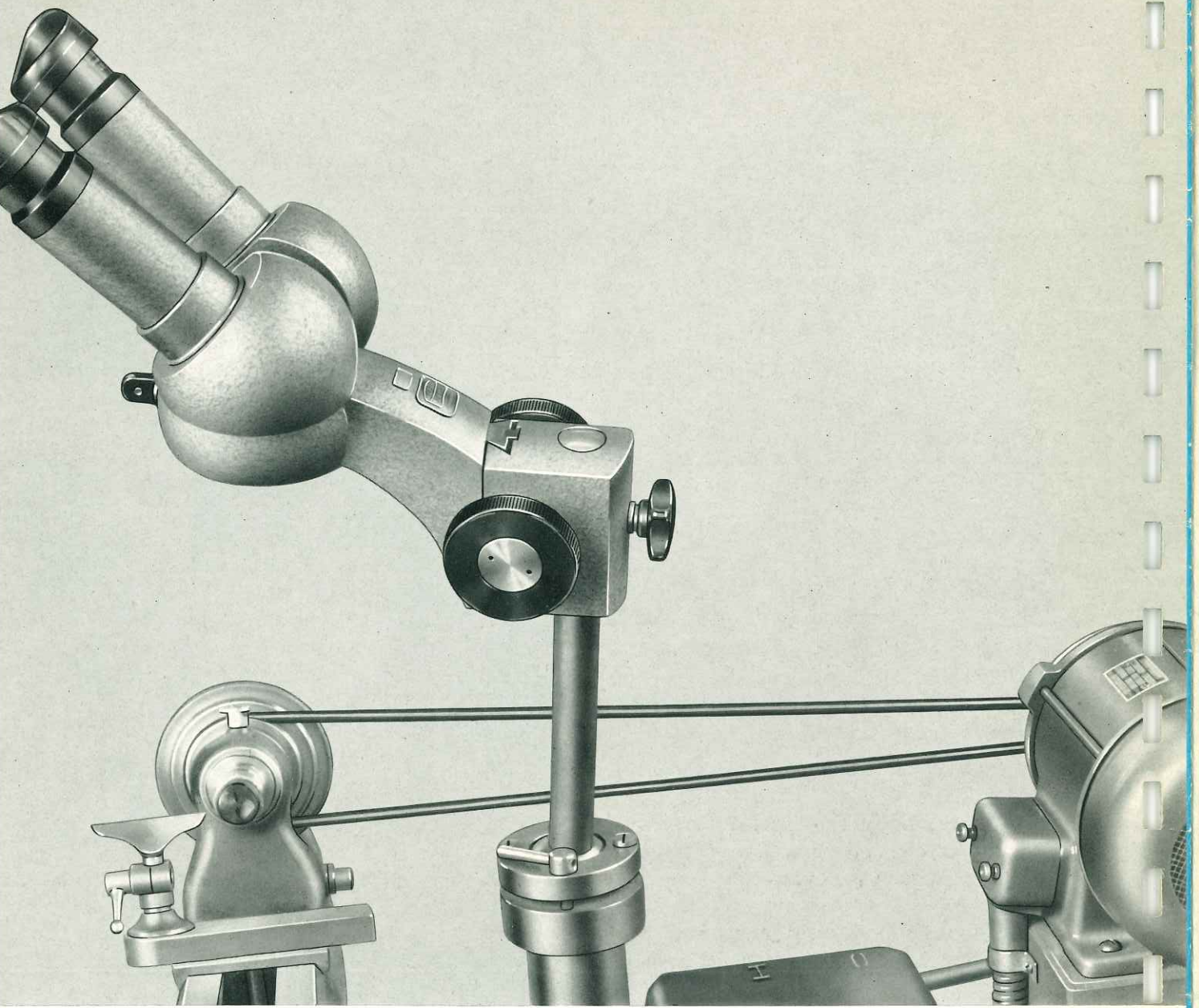
Handrests are supplied to facilitate dissection under Stereomicroscopes. They are adjustable to such an extent as to meet every conceivable requirement.

A drawing apparatus is available for use in making drawings of a specimen under the Stereomicroscope. The apparatus is mounted on one of the tubes (preferably the right one), leaving the eyepiece in the tube. The observer, looking through the drawing apparatus, simultaneously sees the specimen and, lying horizontally below it, the drawing surface together with the pencil point (cf. leaflet 40-310).

In taking photomicrographs with the Attachment Camera on Stereomicroscope II, it is necessary to make a separate exposure for each of the two pictures required for a stereo pair. To do this, the photo sliding tube is successively clamped in each of its end positions. In taking photographs with incident light, the iris diaphragm in the tube is closed in order to increase the depth of field.

With use of Contarex Special or Contax the stereo pair is taken with a single exposure. These cameras are attached to Stereomicroscope II with special stereo adapters.

For focusing with the Contax a groundglass adapter is required. This is unnecessary for the Contarex Special, since that is a reflex camera.



Stereomicroscope 01 with an inclined binocular tube rotated by 180° mounted on a bench. The holding device including a column of 18 mm. dia. is not a series-produced component.

Order List

	Catalogue No.	Weight approx. kg
Stereomicroscope 01		
for magnifications 2.5×, 6.3×, 16× (by change of eyepieces) with stand P 01 and paired eyepieces 10×	49 50 70	3.135
Stereomicroscope 02		
for magnifications 8×, 20×, 50× (by change of eyepieces) with stand P 02 and paired eyepieces 10×	49 50 71	3.135

Stereomicroscope I	Catalogue No.	Weight approx. kg
1. Stereomicroscope I, for examinations with incident light, with stand G, simple circular stage, paired eyepieces 10× and eyecups, paired objectives 1.0/0.03, 2.5/0.05, 6.3/0.09, in cabinet	49 50 62	9.840
2. Stereomicroscope I, for examinations with incident and transmitted light, with stand F, transmitted-light inset, stage support for stand F, simple circular stage, paired eyepieces 10× and eyecups, paired objectives 1.0/0.03, 2.5/0.05, 6.3/0.09, in cabinet	49 50 64	9.665
3. additional paired objectives for Stereomicroscope I		
paired objectives 0.63/0.025	47 50 10	0.085
paired objectives 1.6/0.04	47 50 12	0.075
paired objectives 4.0/0.07	47 50 14	0.105
paired objectives 10/0.12	47 50 16	0.110
Stereomicroscope II		
1. Stereomicroscope II with quick magnification changer, for examination with incident light, with stand G, simple circular stage, paired eyepieces 10× and eyecups, in cabinet	49 50 50	8.725
2. Stereomicroscope II with quick magnification changer, for examination with incident and transmitted light, with stand F, transmitted-light inset, stage support for stand F, simple circular stage, paired eyepieces 10× with eyecups, in cabinet	49 50 51	9.760
3. Stereomicroscope II POL with quick magnification changer, for examination with incident and transmitted light, with stand F, transmitted-light inset, polarizing circular rotating stage with polarizer on stage support, analyzer device with anhydrite adjusting slide, eyepiece 10×, eyepiece 10× with adjustable eyelens, eyecups, eyepiece clamping ring, cross lines graticule, and dust-protection hood	49 50 53	6.000
Illuminating device for Stereomicroscopes (for incident and transmitted light):		
with holder, lamp housing, collector, lamp socket, low-voltage filament bulb 6 V, 15 W, filter holder, heat protecting filter KG 1, and transformer	49 50 52	1.445
Illuminator for transmitted light for Stereomicroscopes with 2 complete low-voltage bulbs and 2 transformers with taps	49 50 55	3.790
Eyepieces for Stereomicroscopes		
eyepiece 4×[1])	46 36 01	0.145
eyepiece 10×	46 40 01	0.135
eyepiece 10× with adjustable eyelens	46 40 04	0.240
eyepiece 25×	46 44 01	0.090
eyepiece 25× with adjustable eyelens	46 44 04	0.165
eyecup for eyepieces	46 49 00	0.015
clamping ring for eyepiece, 33 mm. ⌀	46 49 12	0.090

. Additional accessories upon request.

[1]) Not recommended for use with Stereomicroscope II.

The illustrations are not binding in all details for the construction of the instruments.

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Kindly consult our nearest branch (in the German Federal Republic), ZEISS representative (abroad) or CARL ZEISS, Oberkochen, Wuerttemberg, direct regarding all questions of functioning, maintenance, and repair of our instruments, as well as for the procurement of spare parts.

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